

Abstract

A polysilicon electrode layer (103) (a first electrode layer) is formed by forming a polysilicon film on a gate oxide film (102) on a silicon wafer (101). A tungsten layer (105) (a second electrode layer) is formed on this polysilicon electrode layer (103). In addition, a barrier layer (104) is formed on the polysilicon electrode layer (103) before the formation of the tungsten layer (105).

Etching is then conducted using a silicon nitride layer (106) as the etching mask. Next, an oxide insulating film (107) is formed on an exposed surface of the polysilicon layer (103) by plasma oxidation wherein a process gas containing oxygen gas and hydrogen gas is used at a process temperature not less than 300°C. With this method, a selective oxidation of the polysilicon electrode layer (103) can be carried out without oxidizing the tungsten layer (105).